Palestinian Central Bureau of Statistics

Palestinian Land Use Classification System

November, 2000

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Preface

Land use statistics is considered as one of the most important fields in official statistics. There is a need for producing periodic and reliable data on the distribution of land by use. The main objective of this type of data is to monitor the main changes that occur to land use and other natural resources over the time. This information contributes to the planning and development process, as well as legislation aiming at organizing the use of the land and other available natural resources.

PCBS has established a statistical program concerning the land use. The main objective of this program is to develop a reliable statistical database on the various subjects concerning the land use. This database will provide the decision-makers with important instruments for planning and policy making that will serve the national goals by providing efficient allocation of the limited natural resources in the most suitable way.

A unified land use classification system used by all related institutions is considered a basic step in establishing a land use database. It allows comparing data between institutions, and makes international comparison possible.

To make certain that all concerned institutions have contributed to developing the Palestinian Land Use Classification System, it was sent to several institutions to benefit from their comments. It was sent to the Islamic University, Al Azhar University, Hebron University, Al Quds University, Open University of Al Quds, An Najah National University, Bethlehem University and Birziet University. It was also sent to the following ministries: the Ministry of Housing, the Ministry of Public Work, the Ministry of Planning and International Cooperation, the Ministry of Local Governing, the Ministry of Tourism and Culture, the Ministry of Transport and Communication, the Ministry of Environment and the Ministry of Agriculture. The classification System was also sent to the following institutions: the Palestinian Authority of Water, the Arab Studies Society, Applied Research Institute-Jerusalem and Agriculture Aid Society. It was taken into consideration that the changes did not affect the integrity of the adopted land use classification system by the Economic Commission for Europe (ECE).

PCBS hopes that this classification system will form a basis in the development of land use studies in the Palestinian institutions, and contributes to unifying systems, concepts and definitions used by institutions working in the field of land use.

November, 2000

Hasan Abu-Libdeh, Ph.D.
President

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Summary

1. Introduction:

Land use statistics is considered as one of the most important statistical fields all over the world. It gained an international concern because of its importance in planning policies, natural resources management and law enactment to organize the use of land.

There is an increasing and urgent need for land use statistics in the Palestinian Territory especially after the long period of Israeli occupation. PCBS has established a land use statistics program to collect and disseminate land use statistics to be used in research and policy planning.

This report is a result of PCBS efforts to unify classification systems, concepts and definitions used in all institutions to make sure that there is a harmony in the used and produced data by all. This step is considered as a base for establishing a land use database for the Palestinian Territory.

The Palestinian Land Use Classification System was developed in accordance with the land use classification system adopted by the Economic Commission for Europe (ECE). This classification system is suitable for the Palestinian Territory since it depends on methods and sources used to produce land use data, such as administrative records and analysis of aerial and satellite images. The classes used in this classification system are almost the same as the land use classes available in the Palestinian Territory. To make certain that the adopted classification system is suitable for the Palestinian Territory, it was sent to different related institutions to be developed to suit the situation here. Some classes concerning the use of Palestinian land by Israeli Occupation were added.

The main objective of this report is to produce a unified land use classification system for the Palestinian Territory to be used by all related institutions. This unified classification system will simplify the exchange of data by institutions, and make sure that this data is in harmony. At the same time it will make international comparison of data possible.

This report includes four chapters: the first chapter presents the introduction, the objectives and the structure of the report, the second chapter contains concepts and definitions, the third chapter describes ECE Land Use Classification System and the fourth chapter presents the Palestinian Land Use Classification System.

2. Concepts and Definitions:

Agricultural land: This refers to the major classes of land use on agricultural holdings. For classification the "gross area" is surveyed for each class. Agricultural land includes land under scattered farm buildings, yards and their annexes, permanently uncultivated land, such as uncultivated patches, banks footpaths, ditches, headlands and shoulders.

Arable land: This refers to all land generally under rotation whether for temporary crops or meadows, or left fallow.

Land under permanent crops: This signifies land used for crops occupying it for a long period of time and which do not have to be planted for several years after each harvest. Land under trees and shrubs producing flowers, such as roses and jasmine, is so classified, as are nurseries (except those for forest trees, which, should be classified under "forests and other wooded land"). Permanent meadows and pastures are excluded.

Land under permanent meadows and pastures: This means land used permanently (i.e., for five years or and more) for herbaceous forage crops. Permanent meadows and pastures on which trees and shrubs are grown should be recorded under this heading only if the growing of forage crops is the most important use of the area. Measures may be taken to keep or increase productivity of the land (i.e. use of fertilizers, mowing or systematic grazing by domestic animals).

All other agricultural land: This includes all agricultural land, which is not specified previously. Such land may be potentially productive or not. Included are scattered farm buildings, i.e. isolated buildings not belonging to closed villages or similar rural localities.

Fallow agricultural land: Arable land not under rotation that is set at rest for a period of time ranging from one to five years before it is cultivated again, or land usually under permanent crops, meadows or pastures, which is not being used for that purpose for a period of at least one year. Arable land which is normally used for the cultivation of temporary crops, but which is temporarily used for grazing is included.

Forest and other wooded land: Classification of forest and other wooded land should be undertaken irrespective of the characteristics of the soil (e.g. wet forest should be shown under forest and not under wetlands). Forest and other wooded land used primarily for agricultural purposes such as grazing should not be included under this category but under agricultural land. Excluded is land under timber classified elsewhere, such as city parks and gardens (included in category 3), etc.

Built- up and related land (excluded scattered farm buildings): Land under houses, roads, mines and quarries and any other facilities including their auxiliary spaces, deliberately inside pursuit of human activities. Included are also certain types of open land (non-built-up land), which are closely related to these activities, such as waste tips, derelict land

	in built-up areas, junkyards, city parks and gardens, etc. Land occupied by scattered farm buildings, yards and their annexes is excluded. Land under closed villages or similar rural localities is included.
Residential land:	Land which is mainly covered by residential or mainly residential buildings, irrespective of whether they are actually occupied or temporarily vacant. Included in residential land are attached private gardens and small green areas, which are mainly used by the inhabitants of the buildings to which they are attached. Residential areas also comprise parking facilities and small playgrounds, which are essentially reserved for use by local population.
Residential land with mainly one or two story buildings:	Residential land, which is covered by residential or mainly residential buildings of not more than two stories. Excluded is land mainly occupied by secondary residences or vacation houses.
Residential land with three or more story buildings:	Residential land, which is covered by residential or mainly residential buildings of more than two stories.
Industrial land:	Land on which mainly manufacturing activities are pursued, including all auxiliary grounds, such as private roads, parkings, storage grounds, office grounds, etc. Included is land used by enterprises primarily engaged in construction work. Harbor areas and their storage facilities, although possibly extending to industrial premises, are excluded. Also excluded is land for quarries, mines, pits and related facilities.
Land used for quarries, pits, mines and related facilities:	Land which is used in connection with mining and quarrying activities, including abandoned mines and quarries not put to different use.
Land used for peat cutting:	Land area on which cutting of peat actually takes place.
Land used for other open-cast mining and quarrying:	Land area used in connection with all mining and quarrying activities in open pits and quarries, except the cutting of peat.
Commercial Land:	Land mainly used for commerce, trade and related services, such as shopping centers, banks, commercial garages, repair shops, commercial storage facilities, related office buildings, etc. Also included are private roads and other auxiliary spaces located in the areas concerned.
Land used for public services (excluding transport,	This category comprises land mainly used for public administrations at the national, provincial or local levels,

communication and technical infrastructure):	schools, hospitals, churches and other social and cultural facilities, irrespective of whether these functions are provided by government, institutions or private persons. Included is land used for their auxiliary purposes. Excluded is land used for purposes specified elsewhere, in particular land under technical infrastructures and land used for public transport and communication facilities.
Land of mixed use:	This category is reserved for land, to which no single main use in accordance with other items under this category can be ascribed.
Land Used for transport and communication:	Land used for public and private railways, operating on a commercial basis, public roads, land used for surface pipelines for the transport of fuels and other products, airports, land used for installations of the telecommunications system, etc. Included is also the land used for transport-related offices and other service buildings and installations such as stations, airport buildings, storage facilities for equipment and repair workshops, space used for sidewalks, grass slopes along railways, wind shelter belts along roads, open noise abatement areas around airports as well as any other space needed, according to national practices, for the provision of the related infrastructure. However, waterways are not classified here.
Land under roads:	Part of total land under transport and communication facilities, which is used by public roads, including motorways, and their auxiliary services. Included are pavements, public parking lots along roads and similar spaces.
Land under railways:	Part of total land under transport and communication facilities, which is used by public railways as well as private air systems, operating on a commercial basis. Included is land used for their auxiliary services, such as stations, related administrative buildings, storage yards, installations for repair and maintenance of equipment and the like.
Land under airports and related facilities:	Part of total land for transport and communication facilities, which is used by airports and airfields of all kinds and their related buildings or installations.
Land used for technical infrastructure:	This item covers land used for technical installations that serve the generation and transmission of electricity, the treatment and disposal of wastes, supply and distribution of water, collection and treatment of waste-water and related activities. Included is also the land used for related offices

	and other service buildings and installations, as well as any space needed, according to national practices, for the operation of such technical infrastructure.
Land used for the disposal of wastes:	Land used for waste treatment installations and their auxiliary grounds, and waste tips of all kinds (including junkyards), except installations for the collection and treatment of wastewater.
Land used for water supply and waste-water treatment:	Land used for technical infrastructure that is devoted to water supply, sewage and wastewater treatment installations.
Land used for electricity generation and distribution:	Land used for technical infrastructure that is devoted to the generation of electricity and to the exclusive use for high-voltage transmission of electricity.
Recreational and other open land:	This item relates to land used for purposes of recreation, e.g. sports fields, gymnasium, major playgrounds, major public parks and green areas, public beaches and swimming pools, camping sites, areas mainly occupied by facilities for tourism, secondary residences or vacation houses, hobby gardening, cemeteries, open land currently under construction or destined for future construction … etc.
Parks, green areas, hobby gardens, cemeteries, etc.:	Land used for facilities mentioned and similar purposes (i.e. major playgrounds, sports fields, etc.), including their auxiliary spaces.
Recreational land mainly occupied by camping sites, secondary residences or vacation homes:	Part of total residential land, which is mainly used in an identifiable way by camping sites, secondary residences or vacation homes.
Land under current construction	Open land on which construction is currently in process.
Land intended for future construction:	Land areas designated in public land development plans as land for construction, but where construction works have not yet started.
Wet open land:	Non- wooded sites either partially, temporary or permanently water- logged, the water of which may be fresh, brackish or saline, on blanket or raised peat lands. The water may be either stagnant or running, and is usually shallow, especially if it is saline.

Dry open land with special vegetation cover:	Non- wooded land, which is covered by low vegetation (less than 2 meters). This includes: heath lands, dry mountainous grassland, and other n.e.s.
Heath land:	Uncultivated open land, covered with vegetation often consisting to a considerable degree (25 per cent or more) of ligneous and semi-ligneous plants (fern, heather, furze, genista, etc.) as well as of herbaceous.
Mountainous grassland:	Natural grassland in mountainous areas, which may or may not be used for the grazing of domestic animals.
Mountainous grassland used for grazing of domestic animals:	Land, on which domestic animals are periodically grazed, usually during seasons.
Open land without , or with insignificant vegetation cover:	Non-built-up land the surface of which is not covered at all by vegetation or scarcely covered by some vegetation, which precludes its inclusion in other categories of the classification. This includes bare rocks, sand-beaches, dunes, other sandy land and other lands that are not mentioned elsewhere.
Bare rocks:	Part of open land covered by bare rocks.
Sand-beaches, dunes, other sandy land:	Part of open land covered by beaches, dunes, crude deserts and desertification areas, etc.
Waters:	This relates to the part of the national territory to be reported, which is covered by surface waters. The national territory to be reported is defined as the surface enclosed by all inland borders and, if applicable, the normal base-line (low-water mark) on the seaward side. This includes inland waters and tidal waters.
Inland waters:	It includes Natural watercourses, artificial watercourses, inland sea (freshwater or saline), lakes, ponds coastal land-locked bodies of water and artificial water impoundments.
Natural watercourses:	Watercourse, either natural or to some extent artificially constructed, including the (generally broad) portions near its outlets. The mean tidal level in estuaries determines the borderline between a watercourse and the sea into which it flows. The (imaginary) shoreline of a natural watercourse determines its borderline with an artificial watercourse, where applicable.
Artificial watercourse:	Fully artificially constructed watercourse which services in-stream uses, purposes of water management, irrigation

	and the like. The mean tidal level determines the borderline between an artificial watercourse and the sea. The (imaginary) shoreline of the natural watercourse determines the borderline between an artificial and a natural watercourse, where applicable.
Inland sea (freshwater or saline):	A natural water body (freshwater or saline) located in a depression in the earth's surface, which is filled with water and surrounded more or less completely by land. The land could form part of one or more countries. The water body could have one or more inlets or outlets in streams, brooks or channels). Bodies of water included in this category are always separated from the open sea.
Artificial water impoundment:	A water body impounded by a dam, which is used for the supply of drinking water, electricity generation, irrigation or animal husbandry. Watercourses being part of reservoir system are included.
Tidal Waters:	It includes coastal lagoons, estuaries and other tidal waters not elsewhere stated.
Coastal lagoons:	Seawater bodies at the coast, but separated from the sea by land spits or similar land features. Coastal lagoons are open to the sea in restricted spaces.
Estuaries:	Consist of those generally broad portions of a river, stream, brook or torrent near its outlet, which is influenced by the marine water body into which it flows. The demarcation line is generally the mean tidal level.
Land used for Israeli settlements:	It refers to that part of the Palestinian land that is illegally used by Israel for the construction of settlements.
Agriculture land used by Israeli occupation:	It refers to that part of the Palestinian agricultural land that is illegally used by Israel for agricultural purposes.
Land Used for Israeli millitant station:	The palestinian land where Israel governoment established a millitant station on it.

3. ECE Land Use Classification System:

3.1 Introduction:

The classification provides a structure into which available national information can be cast in order to arrive at internationally comparable data. In addition, account is taken of the special national characteristics and purposes within which nationally available information is generated, as well as of possible other roles a land use classification is likely to play.

Four broad substantive concerns require land information, each creating special needs. The first is concerned with the description of existing land use pattern. It requires land information in terms of land cover. The second area comprises questions linked to demand for land for human activities in a broad sense. Such concerns stipulate the existence of the information on the use of land, and its changes over time, in terms of a breakdown by type of human activity. The third area of concern relates to environmental repercussions of land use. While information on land cover can be used as a starting point in this context, the assessment of environmental impact, for example, necessitates the incorporation of ecological aspects into the classification. The fourth area focuses on the planning of the future potential or alternative uses of land, which can partly be met through capability assessments.

The four areas of concern are not mutually exclusive; their information needs overlap to some extent. Aspects of land cover, while being the easiest to collect statistical information on, are often interwoven to a considerable degree with activity aspects. The ECE Standard Classification of Land Use is a mixed classification of land cover and activity categories. Such classification is dominated by physical characteristics at one-digit level. In selecting this approach, emphasis was put on practical aspects of actual production of land use statistics. Accordingly, previous versions of this classification had been tested wholly or partly (with the help of the joint Food and Agricultural Organization (FAO) and ECE working partly on forest economics and statistics and of the Organization of Economic Co-operation and Development (OECD) before their further development was undertaken.

The classification focuses on inventory data of land. Statistical information on land use changes may be of equal or even greater interest to users of land information. The conceptual development of internationally comparable statistics on land use changes is undertaken by the Conference of European Statisticians in the framework of the development of a set of ECE Environmental Indicators. Statistics of land use changes could be derived from adequate inventory data, but could also be available from other sources.

This classification does not provide for information that would be directly relevant for the consideration of the degree of reversibility of land use changes. Likewise, it does not provide support to investigations into the environmental aspects of human settlements.

3.2 Relationship to Data Collection and Processing Techniques:

Relationships exist between classifications and particular data collection techniques in the field of land use statistics. For example, the use of remote sensing techniques discloses land information in terms of land cover, while functional characteristics can only rarely be recorded by this technique. Thus the classification is not entirely and exclusively tailored towards the capabilities of remote sensing. Modern data processing techniques in most cases, however, permit the linkage and cross-classification of data obtained through various techniques. This is particularly true for data from geographic information systems.

3.3 Conventions:

There are some conditions to use this classification system which are:

1. The classification is considered basic at one- and two-digit levels. The three-digit level is optional.

2. The concept used in recording agricultural land should be the "gross area" concept as developed by FAO, subjected to the adaptations required by the conventions below.
3. For purposes of actual classification of land, a lower size limit of 0.5 hectare (5 dunums) is applied in the categories of the draft classification. Countries for which the application of this minimum size is impossible are invited to indicate their national practices in appropriate footnote, whenever data are reported internationally.
4. This classification should cover the total territory of a country. The sum of the classes 1 to 6 forms the "total land area".

3.4 Land Use Classification System:

1. Agricultural land
   1.1 Arable land
   1.2 Land under permanent crops
   1.3 Land under permanent meadows and pastures
   1.4 Other agricultural land, not elsewhere stated
   1.5 Total agricultural land of which: Fallow agricultural land.
2. Forest and other wooded land.
   2.1 Total land under forest and other wooded land of which:
      - Stands of exotic species
      - Particularly fire-prone stands

      2.1.1 With wood production the recognized major function
      2.1.2 With protection, conservation and biological use the recognized major functions
      2.1.3 With recreation the recognized major function
   2.2 Land under coniferous forest
      2.2.1 (same as 2.1.1)
      2.2.2 (same as 2.1.2)
      2.2.3 (same as 2.1.3)
   2.3 Land under non-coniferous forest
      2.3.1 (same as 2.1.1)
      2.3.2 (same as 2.1.2)
      2.3.3 (same as 2.1.3)
   2.4 Land under mixed forest
      2.4.1 (same as 2.1.1)
      2.4.2 (same as 2.1.2)
      2.4.3 (same as 2.1.3)
   2.5 Other wooded land
      2.5.1 (same as 2.1.1)
      2.5.2 (same as 2.1.2)
      2.5.3 (same as 2.1.3)
3. Built-up and related land (excl. scattered farm buildings)
   3.1 Residential Land
      3.1.1 With mainly one- or two-story buildings
      3.1.2 With mainly three- or more-story buildings
   3.2 Industrial land (excl. land classified under 3.3 below)
   3.3 Land used for quarries, pits, mines and related facilities
      3.3.1 For peat cutting

3.3.2 For other open-cast mining and quarrying
3.3.3 Other, not elsewhere stated
3.4 Commercial land.
3.5 Land used for public services (excluding transport, communication, and technical infrastructure).
3.6 Land of mixed use.
3.7 Land used for transport and communication.
3.7.1 Land under roads
3.7.2 Land under railways
3.7.3 Land under airports and related facilities
3.7.4 Other land used for transport and communication, not elsewhere stated
3.8 Land used for technical infrastructure.
3.8.1 Land used for disposal of wastes
3.8.2 Land used for water supply and waste-water treatment
3.8.3 Land used for electricity generation and distribution
3.8.4 Other land used for technical infrastructure, not elsewhere stated
3.9 Recreational and other open land
3.9.1 Parks, green areas, hobby gardens, cemetries,etc
3.9.2 Recreational land mainly occupied by camping sites, secondary residences or vacation houses
3.9.3 Land under current construction
3.9.4 Land intended for future construction
3.9.5 Other, not elsewhere stated

4. Wet open land
4.1 Mires
4.1.1 Ombrogenous mires (Upland moors)
4.1.2 Sligenous mires (Lowland bogs)
4.2 Wet tundra
4.3 Other wet open land, not elsewhere stated

5. Dry open land with special vegetation cover
5.1 Heathland
5.2 Dry tundra
5.3 Mountainous grassland
5.3.1 Used for grazing of domestic animals
5.3.2 Not used for grazing of domestic animals
5.4 Other not elsewhere stated

6. Open land without, or with insignificant, vegetation cover.
6.1 Bare rocks, glaciers, perpetual snow
6.1.1 Bare rocks
6.1.2 Glaciers and perpetual snow
6.2 Sand-beaches, dunes, other sandy land
6.3 Other, not elsewhere stated

7. Waters.
7.1 Inland waters
Of which: in harbor areas
7.1.1 Natural watercourses
7.1.2 Artificial watercourses

7.1.3 Inland sea (freshwater or saline), lakes, ponds, coastal land-locked bodies of water
7.1.4 Artificial water impoundments
7.1.5 Other inland waters, not elsewhere stated

7.2 Tidal waters

Of which: in harbor areas

7.2.1 Coastal lagoons
7.2.2 Estuaries
7.2.3 Other tidal waters, not elsewhere stated

4. Palestinian Land Use Classification System:

1. Agricultural land
   1.1 Arable land
   1.2 Land under permanent crops
   1.3 Land under permanent meadows and pastures
   1.4 Other agricultural land, not elsewhere stated
   1.5 Fallow agricultural land.
2. Forest and other wooded land.
3. Built-up and related land (excl. scattered farm buildings)
   3.1 Residential Land
   3.2 Industrial land (excl. land classified under 3.3 below)
   3.3 Land used for quarries, pits, mines and related facilities
   3.4 Commercial land.
   3.5 Land used for public services (excluding transport, communication, and technical infrastructure).
   3.6 Land of mixed use.
   3.7 Land used for transport and communication.
   3.8 Land used for technical infrastructure.
   3.9 Recreational and other open land
4. Wet open land
5. Dry open land with special vegetation cover
6. Open land without, or with insignificant, vegetation cover.
7. Waters.
   7.1 Inland waters.
   7.2 Tidal waters.
8 Occupied land
   8.1 Land incorporated by Israel.
   8.2 Land used for settlements.
   8.3 Agriculture land used by settlements.
   8.4 Land used by Israeli military posts.

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